

## **IN THE CLAIMS**

This listing of claims replaces all prior versions, and listings, in this application.

Claims 1-51 (canceled)

52. (currently amended) A genetically transformed plant able to produce a lysosomal enzyme of animal or human origin, said plant transformed with ~~the use of~~ an expression vector comprising:

- a. the ~~the~~ [[a]] promoter of SEQ ID No. 6, operably linked to;
- b. the ~~the~~ [[a]] DNA sequence of SEQ ID No. 7, which encodes ~~encoding~~ a signal sequence ~~of SEQ ID No. 7~~; and
- c. a DNA sequence encoding said lysosomal enzyme deleted of ~~lacking~~ its native signal sequence, wherein the DNA sequence of SEQ ID No. 7 is fused in-frame to the DNA sequence encoding said lysosomal enzyme;

wherein said lysosomal enzyme is expressed in seed storage tissues in enzymatically active form and in an amount of at least 0.8% of ~~the seed~~ extracted total proteins.

53. (previously presented) The plant according to claim 52, wherein the expression vector is a plasmid.

Claim 54 (canceled)

55. (previously presented) The plant according to claim 52, wherein the lysosomal enzyme expressed in enzymatically active form in seed storage tissues is selected from the group consisting of  $\alpha$ -N-acetylgalactosaminidase, acid lipase, aryl sulfatase A, aspartylglycosaminidase, ceramidase,  $\alpha$ -fucosidase,  $\alpha$ -galactosidase A,  $\beta$ -galactosidase, galactosylceramidase, glucocerebrosidase,  $\alpha$ -glucosidase,  $\beta$ -glucuronidase, heparin N-sulfatase,  $\beta$ -hexosaminidase, iduronate sulfatase,  $\alpha$ -L-iduronidase,  $\alpha$ -mannosidase,  $\beta$ -mannosidase, sialidase, and sphingomyelinase.

56. (currently amended) The plant according to claim 53 [[54]], wherein the lysosomal enzyme expressed in enzymatically active form in seed storage tissues is selected from the group consisting of  $\alpha$ -N-acetylgalactosaminidase, acid lipase, aryl sulfatase A, aspartylglycosaminidase, ceramidase,  $\alpha$ -fucosidase,  $\alpha$ -galactosidase A,  $\beta$ -galactosidase, galactosylceramidase, glucocerebrosidase,  $\alpha$ -glucosidase,  $\beta$ -glucuronidase, heparin N-sulfatase,  $\beta$ -hexosaminidase, iduronate sulfatase,  $\alpha$ -L-iduronidase,  $\alpha$ -mannosidase,  $\beta$ -mannosidase, sialidase, and sphingomyelinase.

57. (currently amended) The plant according to claim 55 [[52]], wherein said plant is a *Leguminosa*, a cereal, or tobacco.

58. (previously presented) The plant according to claim 56, wherein said plant is a *Leguminosa*, a cereal, or tobacco.

59. (currently amended) A method for producing the plant according to claim 52 comprising ~~the following steps~~:

- constructing an expression vector comprising:

- a. the [[a]] promoter of SEQ ID No. 6, operably linked to;
- b. the [[a]] DNA sequence of SEQ ID No. 7, which encodes a ~~encoding the~~ signal sequence of SEQ ID No. 7; and
- c. a DNA sequence encoding said lysosomal enzyme deleted of its the native signal sequence, wherein the DNA sequence of SEQ ID No. 7 is fused in-frame to the DNA sequence encoding said lysosomal enzyme;

- transforming plant cells with said vector; and

- regenerating a genetically ~~using said cells to regenerate said transformed plant from~~ said transformed plant cells.

60. (previously presented) The method according to claim 59, wherein said plant is a *Leguminosa*, a cereal, or tobacco.

61. (currently amended) A seed of a genetically transformed ~~modified plant, according to claim 52 wherein:~~

- wherein said seed contains an expression vector comprising:

- a. the ~~the~~ [[a]] promoter of SEQ ID No. 6, operably linked to;
- b. the ~~the~~ [[a]] DNA sequence of SEQ ID No. 7, which encodes a ~~encoding the~~ signal sequence of SEQ ID No. 7 able to target said lysosomal enzyme to seed storage organs and to provide the post-translational modifications required for the expression of the enzyme in active form; and
- c. a DNA sequence encoding said lysosomal enzyme ~~deleted of lacking its~~ native signal sequence, wherein the DNA sequence of SEQ ID No. 7 is fused in-frame to the DNA sequence encoding said lysosomal enzyme;  
and

- wherein said enzyme is contained in seed storage tissues in enzymatically active form and in the amount of at least 0.8% of ~~the seed-extracted~~ total proteins.

62. (previously presented) The seed according to claim 61, wherein the expression vector is a plasmid.

Claim 63 (canceled)

64. (previously presented) The seed according to claim 61, wherein the lysosomal enzyme expressed in enzymatically active form in seed storage tissues is selected from the group consisting of:  $\alpha$ -N-acetylgalactosaminidase, acid lipase, aryl sulfatase A, aspartylglycosaminidase, ceramidase,  $\alpha$ -fucosidase,  $\alpha$ -galactosidase A,  $\beta$ -galactosidase, galactosylceramidase, glucocerebrosidase,  $\alpha$ -glucosidase,  $\beta$ -glucuronidase, heparin N-sulfatase,  $\beta$ -hexosaminidase, iduronate sulfatase,  $\alpha$ -L-iduronidase,  $\alpha$ -mannosidase,  $\beta$ -mannosidase, sialidase, and sphingomyelinase.

65. (currently amended) The seed according to claim 62 ~~[[63]]~~, wherein the lysosomal enzyme expressed in enzymatically active form in seed storage tissues is selected from

the group consisting of  $\alpha$ -N-acetylgalactosaminidase, acid lipase, aryl sulfatase A, aspartylglycosaminidase, ceramidase,  $\alpha$ -fucosidase,  $\alpha$ -galactosidase A,  $\beta$ -galactosidase, galactosylceramidase, glucocerebrosidase,  $\alpha$ -glucosidase,  $\beta$ -glucuronidase, heparin N-sulfatase,  $\beta$ -hexosaminidase, iduronate sulfatase,  $\alpha$ -L-iduronidase,  $\alpha$ -mannosidase,  $\beta$ -mannosidase, sialidase, and sphingomyelinase.

66. (currently amended) The seed according to claim 64 ~~[[61]]~~, wherein said seed is of a *Leguminosa*, a cereal or tobacco.

67. (previously presented) The seed according to claim 65, wherein said seed is of a *Leguminosa*, a cereal or tobacco.

68. (currently amended) A method for producing seeds ~~a seed~~ according to claim 61 ~~[[,]]~~ comprising ~~the following steps~~:

- constructing an expression vector comprising:

- a. the ~~[[a]]~~ promoter of SEQ ID No. 6, operably linked to;
  - b. the ~~[[a]]~~ DNA sequence of SEQ ID No. 7, which encodes a ~~encoding the~~ signal sequence ~~of SEQ ID No. 7~~ able to target ~~dispatch~~ said lysosomal enzyme to seed storage organs and to provide the post-translational modifications required for expression of the enzyme in active form; and
  - c. a DNA sequence encoding said lysosomal enzyme deleted of its ~~the~~ native signal sequence, wherein the DNA sequence of SEQ ID No. 7 is fused in-frame to the DNA sequence encoding said lysosomal enzyme;
- and

- transforming plant cells with said vector; ~~and~~

- regenerating a genetically ~~using said cells to regenerate said transformed plant~~ able to produce said seeds from said transformed plant cells; and

- harvesting seeds of the genetically transformed plant.

69. (previously presented) The method according to claim 68, wherein said seed is of a *Leguminosa*, a cereal or tobacco.

70. (withdrawn/currently amended) A method for using ~~extracting and purifying the lysosomal enzyme in active form contained in the seed~~ according to claim 61, wherein lysosomal enzyme is purified, comprising the following steps:

- a. grinding seeds containing lysosomal enzyme ~~said seed~~ in liquid nitrogen ~~in the presence of an extraction buffer~~;
- b. extracting lysosomal enzyme in active form from the ground seeds with an extraction buffer;
- c. centrifuging the extraction buffer to produce a supernatant ~~resulting solution~~;
- d ~~[[c]].~~ recovering and filtering the supernatant to partially purify ~~with filters having a porosity suitable to the lysosomal enzyme dimensions~~; and
- e ~~[[d]].~~ further purifying the partially purified lysosomal enzyme by HPLC chromatography.

71. (withdrawn/currently amended) A method for using the ~~of use of a seed~~ according to claim 61, wherein medicament is prepared, comprising ~~the steps of~~:

- ~~[[a.]]~~ transforming a plant with an expression vector of claim 61 to yield the genetically modified plant;
- ~~[[b.]]~~ growing the genetically modified plant;
- a ~~[[c]].~~ harvesting seeds ~~the seed~~ of the genetically transformed ~~modified~~ plant;
- b ~~[[d]].~~ purifying the lysosomal enzyme from the seeds ~~seed~~; and
- c ~~[[e]].~~ preparing a medicament comprising the purified lysosomal enzyme for enzyme replacement therapy ~~that comprises the purified lysosomal enzyme from step “d”~~.

72. (withdrawn/currently amended) The method ~~of use~~ according to claim 71, wherein the medicament of step e. ~~is a medicament for an enzyme replacement therapy~~ treats in Gaucher disease.

73. (withdrawn/currently amended) The method ~~of use~~ according to claim 71, wherein the ~~medicament of step e. is a medicament for an enzyme replacement therapy~~ treats in Anderson-Fabry disease.

74. (withdrawn/currently amended) The method ~~of use~~ according to claim 71, wherein the ~~medicament of step e. is a medicament for an enzyme replacement therapy~~ treats in Pompe disease.

75. (withdrawn/currently amended) A method for using the ~~of use of a seed~~ according to claim 61, ~~for the preservation of the wherein~~ lysosomal enzyme in enzymatically active form is preserved, ~~produced in said seed, comprising the steps of:~~

- a. transforming a plant with an expression vector of claim 52 to yield the genetically transformed ~~modified~~ plant;
- b. growing the genetically transformed ~~modified~~ plant;
- c. harvesting seeds ~~the seed~~ of the genetically transformed ~~modified~~ plant;
- d. storing the harvested seeds ~~seed of step e.~~